

Procedures: DIME TEAM: _____

Drop # 1 2 3 4 (circle one) Date: _____

Procedure:

Red – Experiment specific

Black - General

In Lab (either on Level 4, Level 6, or in shop):

Installation:

- _____ 1. Perform experiment-specific activities to prepare the experiment apparatus before mounting in the Education Rig.
- _____ 2. Unplug battery charger.
- _____ 3. Ensure that the battery switch and 12 VDC power supply switch are both OFF.
- _____ 4. Mount the plate into the rig – 4 Allen bolts - fed through bottom of plate.
- _____ 5. If experiment has electrical connections to the Education Rig, connect J1 – J5 as appropriate.
- _____ 6. Adjust Education Rig and/or experiment as required before power is applied.
- _____ 7. Turn Education Rig battery switch ON (lower shelf of Education Rig).
- _____ 8. Turn 12 VDC power supply box ON (lower shelf of Education Rig).
- _____ 9. Perform other experiment-specific functions.
- _____ 10. On the rig control panel, turn switch SW-1 DOWN (back light) or UP (front lights) and switch SW-2 UP to enable the lights.
- _____ 11. Remove and store video camera lens cap.
- _____ 12. Check and adjust video camera
 - _____ a. Turn monitor on.
 - _____ b. Disconnect rig video output cable from back of camera
 - _____ c. Connect monitor video cable to back of camera
 - _____ d. Turn SW-3 UP.
 - _____ e. Use scissors jack to raise or lower camera to change field of view
 - _____ f. Using outer lens ring, zoom camera out to desired field of view
 - _____ g. Using middle lens ring, focus camera
 - _____ h. Using inner ring, adjust f-stop or brightness/darkness level
 - _____ i. Tape lens adjustments (with masking tape) to hold settings
 - _____ j. Turn SW-3 DOWN

Functional Check

- _____ 13. Switch SW-7 to ON on the rig control panel to simulate connections which are made at the top of the drop tower.
- _____ 14. Switch SW-7 to OFF to simulate drop start.
- _____ 15. Verify the proper operation of experiment during simulated drop.
- _____ 16. Verify that the proper light (either back light or front light) is on.

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- _____ 17. Verify that the back light (or front light) turns off 5 seconds after SW-7 is turned off.
- _____ 18. Troubleshoot if necessary
- _____ 19. Disconnect monitor video output cable from back of camera
- _____ 20. Connect rig video cable to back of camera
- _____ 21. Turn monitor off.
- _____ 22. Configure experiment and set final switch positions before leaving off-line lab:

SWITCH	POSITION (enter desired position)
_____ a. SW-1	_____ (UP for front or DOWN for back lights)
_____ b. SW-2	_____ (UP to enable lights: DOWN to disable)
_____ c. SW-3	_____ (UP or DOWN)
_____ d. SW-4	_____ (UP or DOWN)
_____ e. SW-5	_____ (UP or DOWN)
_____ f. SW-6	_____ (UP or DOWN)
_____ g. SW-7	_____ (UP or DOWN)
- _____ 23. **CAUTION:** If the Education Rig control panel switches and relays ARE HOLDING experiment conditions, DO NOT TURN OFF the Education Rig power switches at this time.
- _____ 24. **CAUTION:** Read previous step first! If the Education Rig switches and relays ARE NOT HOLDING the experiment conditions, you may turn 12 VDC Power Supply Box and rig battery switch OFF (if required).
- _____ 25. Take video tape, checklist, and other supplies.
- _____ 26. Transport rig to Level 5.

On Level 5 (NASA Personnel Only):

- _____ 27. Turn rig battery switch ON (if required).
- _____ 28. Turn 12 VDC Power Supply Box ON (if required).
- _____ 29. Verify that floor spacer is up in lower part of drag shield
- _____ 30. Hoist rig into lower part of drag shield
- _____ 31. After crane clears drop area, pull handle on chain fall.
- _____ 32. Use chain fall to move crane track out of drop area.
- _____ 33. Guide top part of drag shield onto lower part using alignment pins.
- _____ 34. Remove caps from transmitter and fiber optic cable with duct tape (Mar. 26, 2003: Correct cable is with DUCT tape on connector)
- _____ 35. Connect fiber optic cable to transmitter
- _____ 36. Using L-wrench, turn locking clamps (8) to LOCKED position.
- _____ 37. Install door
- _____ 38. After hoist operation clears drop area barrier, move floor fully back.
- _____ 39. Spool out fiber optic cable.
- _____ 40. Take video tape and other supplies.
- _____ 41. Proceed to Level 8.

Procedures: DIME TEAM: _____

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On Level 8:

Operator Positions (insert names):

Checklist: _____

Right Instrument Panel (IP): _____

Left Instrument Panel (IP): _____

Intercom: _____

Education Rig: _____ (NASA Personnel)

Sequence of steps is critical!!!!

***Connections at top of Education Rig and flipping switches on
Researcher Control Panel have to follow procedural order !!!!***

- _____ 42. Left IP: Researcher Panel Switches:
 - _____ a. Red DOWN
 - _____ b. Yellow DOWN
 - _____ c. Green DOWN
- _____ 43. Education Rig: After technician latches experiment, open door
- _____ 44. Education Rig: Make release connections on top of drag shield
- _____ 45. Left IP: Researcher Panel Switches:
 - SWITCH POSITION (enter desired position)**
 - _____ a. Red _____ (UP or DOWN)
 - _____ b. Yellow _____ (UP or DOWN)
 - _____ c. Green _____ (UP or DOWN)
- _____ 46. Right IP: Power VTR1 ON
- _____ 47. Right IP: Insert VHS tape into VTR1
- _____ 48. Left IP: Put FM switch to UP position
- _____ 49. Left IP: Press the Character Generator power button to turn it ON
- _____ 50. Left IP: Press PAGE INDEX on Character Generator keyboard
- _____ 51. Left IP: Use the Character Generator arrow keys (up and down) to find the desired "page" or line (Team Name, Drop # ____).
- _____ 52. Left IP: Press PLAY on Character Generator keyboard to display page.
- _____ 53. Left IP: On the video selector switch matrix, press VTR1 OUTPUT and then CHA GEN to get page to VTR1 (confirm with video in VTR1 monitor)
- _____ 54. Right IP: Press RECORD & PLAY together to record the Character Generator page on the video tape for about 5 or 10 seconds.
- _____ 55. Right IP: Observe time changes on VTR1 clock.
- _____ 56. Right IP: Press PAUSE/STILL on VTR1
- _____ 57. Right IP: Press IMPORT button on Macintosh laptop iMovie software to record the Character Generator page on the laptop for about 5 or 10 seconds.

Procedures: DIME TEAM: _____

Drop # 1 2 3 4 (circle one) **Date:** _____

- _____ 58. Right IP: Press IMPORT button on Macintosh laptop to stop recording
- _____ 59. Left IP: On the video selector switch matrix, press VTR1 OUTPUT and then CAM1 to get experiment video to VTR1 (Important: Confirm camera view on VTR1 small video monitor. If necessary, try CAM2.)
- _____ 60. Left IP: On Time Code Generator (Horita FP-50), turn OFF and then ON to reset time.
- _____ 61. Left IP: On Time Code Generator, Press RUN / STOP switch to SET position and release.
- _____ 62. Left IP: Observe time code generator time changes on video monitor.
- _____ 63. Right IP: Press PAUSE/ STILL on VTR1 to restart recording (if still in PAUSE mode from earlier step - otherwise press RECORD & PLAY together)
- _____ 64. Right IP: Observe time changes on VTR1 clock.
- _____ 65. Right IP: Press IMPORT button on Macintosh laptop iMovie software
- _____ 66. Education Rig: **Re-confirm the positions of the Researcher Panel Switches before this step. Place Rig Control Panel switches in proper position for drop (all Control Panel red LEDs normally should be OFF)**
- _____ a. SW-1 DOWN for back lights or UP for front lights
- _____ b. SW-2 UP (this switch will be DOWN only if experiment does not need lights!)
- _____ c. SW-3 _____ (UP or DOWN) Normal is DOWN
- _____ d. SW-4 _____ (UP or DOWN) Normal is DOWN
- _____ e. SW-5 _____ (UP or DOWN) Normal is DOWN
- _____ f. SW-6 _____ (UP or DOWN) Normal is DOWN
- _____ g. SW-7 _____ (UP or DOWN) Normal is DOWN
- _____ 67. Education Rig: Close drag shield door.
- _____ 68. Intercom: Pick up Grey Phone, hold switch in handset, and announce "Prepare for drop"
- _____ 69. Education Rig: Release crane hoist
- _____ 70. Left IP: **If necessary, activate Researcher Panel Switches when needed to activate experiment:**
- SWITCH POSITION (enter desired position)**
- _____ a. Red _____ (UP or DOWN)
- _____ b. Yellow _____ (UP or DOWN)
- _____ c. Green _____ (UP or DOWN)
- _____ 71. Right IP: Observe video for proper operation of lights (if lights were switched on in step 66).
- _____ 72. Left IP: Tell NASA Drop Technician when to drop the experiment
- _____ 73. NASA Drop Technician will release Education Rig.
- _____ 74. Right IP: 10 seconds after impact, press STOP on VTR1
- _____ 75. RIGHT IP: Press IMPORT on Macintosh laptop and do menu selection FILE / SAVE PROJECT
- _____ 76. Right IP: Eject VHS tape from VTR1 and bring with you.
- _____ 77. Proceed to Level 5

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Recovery: (NASA Personnel Only):

- _____ 78. Spool in fiber optic cable
- _____ 79. After hoist operation clears drop area barrier, move floor fully forward.
- _____ 80. Remove door
- _____ 81. Using L-wrench, turn locking clamps (8) to UNLOCKED position.
- _____ 82. Disconnect fiber optic cable from transmitter
- _____ 83. Install caps onto transmitter and fiber optic cable
- _____ 84. Remove fiber optic cable to top of drag shield
- _____ 85. Guide top part of drag shield up away from Education Rig
- _____ 86. After crane clears level 5 area, pull handle on crane track
- _____ 87. Use chain fall to position crane track into drop area.
- _____ 88. After technician positions crane above rig, position hook into receptacle on top of rig.
- _____ 89. Guide rig out of lower drag shield
- _____ 90. Line up cart with crane track
- _____ 91. After technician lowers rig onto cart, wheel cart back to lab.
- _____ 92. Download data from data logger.
- _____ 93. Turn 12 VDC Power Supply Box OFF
- _____ 94. Turn rig battery switch OFF

Experiment Completion:

In Lab (on Level 4, Level 6 or shop):

- _____ 95. Switch Charger to 28 VDC
- _____ 96. Connect Battery to Charger
- _____ 97. Perform actions to recover the experiment.

After Last Drop:

- _____ 98. Disconnect electrical plugs
- _____ 99. Remove Mounting Plate and experiment apparatus from the Education Rig.
- _____ 100. Load experiment into storage container to ship back to team's home school